DIFFERENCES KNOWLEDGE IN EARLY CHILDHOOD CARIES (ECC) PREVENTION AMONG PRIMIPAROUS AND MULTIPAROUS BREASTFEEDING MOTHERS

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ABSTRACT

Early Childhood Caries is a common dental health issue among children. According to the Basic Health Research of Lampung Province in 2018, the prevalence of active dental caries ranged from 19.6% to 20.67%. Multiparous breastfeeding mothers (> 1 child) tend to have more experience and are likely to possess better knowledge regarding oral health compared to primiparous mothers (1 child). The aim of this study is to analyze the differences in knowledge about Early Childhood Caries prevention between primiparous and multiparous breastfeeding mothers at the Maternal and Child Health Clinic of Satelit Public Health Center Bandar Lampung City. This study is a quantitative cross-sectional study with comparative analytical testing using the Mann-Whitney test. A sample of 100 participants was selected through quota sampling. The participants were interviewed using a questionnaire consisting of 8 questions. The results showed that the average knowledge score for primiparous breastfeeding mothers was 4.09±1.176, while for multiparous breastfeeding mothers, it was 4.79±1.160. Bivariate analysis showed a significant difference p=0.019 in knowledge about Early Childhood Caries prevention between multiparous and primiparous breastfeeding mothers. This study indicates a significant difference in Early Childhood Caries prevention knowledge, with multiparous breastfeeding mothers having greater knowledge compared to primiparous breastfeeding mothers.

Keywords: early childhood caries, primiparous breastfeeding mother, multiparous breastfeeding mother, knowledge, prevention.

INTRODUCTION

The Global Burden of Disease Study in 2017 found that around 530 million children globally suffer from dental caries in their primary teeth. Prevalence of Early Childhood Caries (ECC) is on the rise in low- and middle-income countries (World Health Organization, 2019). The American Academy of Pediatric Dentistry (AAPD) defined ECC in 2005 as the presence of one or more decayed, missing, or filled surfaces in the primary teeth of a child aged 71 months or younger (Alazmah, 2017). A 2021 study by Chen et al. revealed that Indonesia has the highest prevalence of ECC, at 90% (Chen et al., 2021). RISKESDAS (Basic Health Research) in 2018 reported that 81.5% of children aged 3 to 4 years in Indonesia experienced dental caries (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, 2018). In Bandar Lampung City, the prevalence of active dental caries was 19.63% according to the RISKESDAS of Lampung Province in 2018, almost equivalent to the overall prevalence of active dental caries in Lampung Province, which is 20.67% (Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan Republik Indonesia, 2018). Satelit Public Health Center is one of the public health centers located in the central area of Bandar Lampung City, the 2023 Satelit Public Health Center Profile reported that 75% of children in the Satelit Public Health Center area require dental care (Dinas Kesehatan Kota Balam, 2023).

It's well-established that parents, especially mothers, play a crucial role in preventing Early Childhood Caries (ECC) (Ulfah & Utami, 2020). A 2020 study by Ulfah R and Utami NK uncovered a strong correlation between parental involvement in maintaining children's oral health and the overall oral health of the children. This study concluded that parents' knowledge about children's oral health directly impacts their level of involvement in their care (Ulfah & Utami, 2020). Similar findings were reported by Reca R et al. in 2022, which emphasized a significant relationship between maternal roles and dental caries status in children (Reca et al., 2022).

The role of mothers has a significant impact on the oral health of children, especially when it comes to breastfeeding. If a mother doesn't adequately take care of her child's dental health, it can result in poor dental health for the child, such as dental cavities. This is particularly common among primiparous mothers who may have limited knowledge and experience (Irawati & Damayanti, 2017). A study by Kharouba J, et al. in 2023 found that multiparous mothers generally have better knowledge about breastfeeding and oral health than primiparous breastfeeding mothers (Kharouba et al., 2023). This finding is supported by the study of Yulita I, Purnama T, and Marliani Y in 2021, which

showed that multiparous mothers generally have better knowledge and attitudes toward oral health and breastfeeding, likely due to their previous childbirth and child-rearing experiences (Yulita et al., 2021).

Based on the description provided, there is currently no data comparing the knowledge of primiparous and multiparous mothers regarding the prevention of Early Childhood Caries (ECC) in Bandar Lampung City. Additionally, there is limited information on the differences in knowledge between primiparous and multiparous breastfeeding mothers regarding ECC prevention in Indonesia. Therefore, the researchers aim to investigate the variations in knowledge between primiparous and multiparous breastfeeding mothers regarding ECC prevention at the Maternal and Child Health Clinic of the Satelit Public Health Center in Bandar Lampung City.

METHODS

This study utilizes a quantitative approach with a comparative analytical method, employing a cross-sectional design (Adiputra et al., 2021). The study took place from April to July 2024 at the Maternal and Child Health Clinic of the Satelit Public Health Center in Bandar Lampung City. Ethical approval was obtained from the Health Research Ethics Committee of the Faculty of Dentistry, Prof. Dr. Moestopo (Beragama) University in March 2024, with ethical permit No. 34/KEPK/FKGUPDMB/V/2024. Following the acquisition of ethical clearance, permission was sought from the Satelit Public Health Center in Bandar Lampung City to conduct the study. Data collection was carried out from July 4-12, 2024, followed by data processing.

The study instrument underwent transcultural adaptation, followed by validity and reliability testing of the questionnaire within the study context of Early Childhood Caries (ECC) prevention, for respondents who met the inclusion and exclusion criteria. Validity testing utilized Pearson's Correlation, with all question items producing r-calculated values ranging from 0.387 to 0.677, surpassing the r-table value (0.349), demonstrating the validity of each question item. Reliability testing was conducted using Cronbach's Alpha, resulting in a Cronbach's Alpha value of 0.705, which exceeds 0.60, indicating the reliability of the test results for each variable. These validity and reliability tests were carried out on 30 respondents, who were breastfeeding mothers at the Kedaton Public Health Center in Bandar Lampung City (Sugiyono, 2018)

The study population includes breastfeeding mothers who meet the following inclusion criteria: those who visit the Maternal and Child Health Clinic at the Satelit Community Health Center in Bandar Lampung City, are willing to participate by completing the research questionnaire, and are cooperative. The exclusion criteria included breastfeeding mothers who visited the clinic, signed the informed consent but did not complete the questionnaire. The sample size of 96 participants was determined using quota sampling, which is a non-probability sampling method. The sample size calculation employed the Lemeshow formula, yielding a result of 96 (Sugiyono, 2018). Therefore, the required sample size for this study was 96 participants.

The primary data collected through questionnaire completion was analyzed using both univariate and bivariate analyses. Prior to the bivariate analysis, a normality test was performed using the Kolmogorov-Smirnov test due to the sample size being over 50 participants. The test produced significance values (Sig) of <0.001 and 0.010. Since a p-value greater than 0.05 indicates a normal distribution, and the results showed $p<0.05$, it was concluded that the data was not normally distributed. As a result, the non-parametric Mann-Whitney U test was used to compare the differences in knowledge about Early Childhood Caries (ECC) prevention between multiparous and primiparous breastfeeding mothers.

RESULTS AND DISCUSSION

Results

Table 1. Characteristics of Breastfeeding Mothers Based on Number of Children

	Number (n)	Percentage (%)
Primiparous and multiparous breastfeeding mothers		
Primiparous (1 child)	47	47.0%
Multiparous (>1 child)	53	53.0%
Total (N)	**100**	**100.0%**

The research findings indicate that out of 100 respondents visiting the Maternal and Child Health Clinic, 47% are primiparous breastfeeding mothers, defined as those with one child, while 53% are multiparous breastfeeding mothers, defined as those with more than one child. The number of respondents between primiparous and multiparous breastfeeding mothers is nearly equal.

Table 2. Frequency Distribution of Age Among Primiparous and Multiparous Breastfeeding Mothers

	Primiparous		Multiparous	
	Number (n)	**Percentage (%)**	**Number (n)**	**Percentage (%)**
Respondent Age				
17-25 years	21	44.7%	3	5.7%
26-35 years	26	55.3%	38	71.7%
36-45 years	0	0.0%	11	20.8%
46-55 years	0	0.0%	1	1.9%
Total (N)	47	100.0%	53	100.0%

The study results show that in the primiparous breastfeeding group, the majority of individuals (55.3%) are aged 26-35, with 26 individuals, while 44.7% are aged 17-25, with 21 individuals. There are no primiparous breastfeeding participants over the age of 35. In the multiparous breastfeeding group, the majority (71.7%) are also in the 26-35 age range, with 38 individuals, followed by 20.8% in the 36-45 range, with 11 individuals. Additionally, there are 5.7% of respondents aged 17-25 (3 individuals) and 1.9% aged 46-55 (1 individual). These findings suggest that the multiparous group has a wider age distribution compared to the primiparous group, with a larger proportion of older multiparous mothers.

Table 3. Frequency Distribution of Knowledge on Early Childhood Caries (ECC) Prevention Among Primiparous and Multiparous Breastfeeding Mothers

No.	**Questions**	**Primiparous**		**Multiparous**	
		Number (n)	**Percentage (%)**	**Number (n)**	**Percentage (%)**
1.	**First visit to the dentist**				
	a) It is recommended to take a toddler to the dentist for the first time at the age of 1 year	23	48.9%	22	41.5%
	b) It is recommended to take a toddler to the dentist for the first time at the age of 3 years	24	51.1%	31	58.5%
2.	**Oral hygiene**				
	a) The oral cavity of the infant should be cleansed prior to tooth eruption, followed by twice-daily cleaning (morning and evening) after the first tooth erupted	41	87.2%	48	90.6%
	b) Teeth should be brushed nightly after the first tooth erupted	6	12.8%	5	9.4%
3.	**Cavities development in children under 3 years**				
	a) Cavities may develop	38	80.9%	47	88,7%
	b) Cavities may not develop	9	19.1%	6	11,3%
4.	**Do you know that infant formula contains sugar?**				
	a) Infant formula contains sugar	41	87.2%	51	96.2%

	b) Infant formula does not contain sugar	6	12.8%	2	3.8%
5.	**Correlation between night time breastfeeding and cavities**				
	a) No correlation	20	42.5%	20	37.7%
	b) Protects against cavities	6	12.8%	3	5.7%
	c) Causes cavities	21	44.7%	30	56.6%
6.	**Effects of bottle feeding on cavity formation**				
	a) Bottle feeding may lead to cavity formation if the toddler does not brush their teeth	36	76.6%	28	52.8%
	b) Bottle feeding may lead to cavity formation despite the toddler brushing their teeth	11	23.4%	25	47.2%
7.	**Tasting food before giving it to the baby**				
	a) Yes	42	89.4%	37	69.8%
	b) No	5	10.6%	16	30.2%
8.	**Cavities in mothers can transmit to their babies**				
	a) True	11	23.4%	16	30.2%
	a) False	36	76.6%	37	69.8%

***Italic*: correct answer.

The questionnaire included questions about the knowledge of primiparous and multiparous breastfeeding regarding the prevention of Early Childhood Caries (ECC). It consisted of 8 questions, covering topics such as the first dental visit for the child, oral hygiene for the baby, cavities in young children, sugar content in infant formula, the impact of bottle feeding on tooth decay, tasting food before giving it to the baby, and the possibility of transmitting cavities from mother to baby. The majority of respondents, both primiparous (48.9%) and multiparous (41.5%) mothers, knew that the first dental visit should take place at 1 year old, but over half of them believed it should be at 3 years old. Most mothers, both primiparous (87.2%) and multiparous (90.6%), also understood the importance of cleaning the baby's mouth before the first tooth erupts. When it came to cavities in young children, most primiparous (80.9%) and multiparous (88.7%) mothers recognized that cavities can develop. Nearly all respondents knew that infant formula contains sugar, with 87.2% of primiparous and 96.2% of multiparous mothers acknowledging this. However, there was a difference in opinions about the association between nighttime breastfeeding and tooth decay, with 44.7% of primiparous and 56.6% of multiparous mothers linking nighttime feeding with a risk of cavities. Regarding bottle feeding, the majority of primiparous mothers (76.6%) believed that bottle feeding could cause cavities if the toddler does not brush their teeth, while 47.2% of multiparous mothers thought this could occur even if the teeth are cleaned. As for the habit of tasting food before giving it to the baby, a higher percentage of primiparous mothers (89.4%) did this compared to multiparous mothers (69.8%). Finally, the majority of respondents in both groups did not believe that maternal cavities could be transmitted to the baby, although more multiparous (30.2%) than primiparous mothers (23.4%) acknowledged this risk.

Table 4. Distribution of Knowledge Scores on Early Childhood Caries (ECC) Prevention Among Breastfeeding Mothers, Categorized by Parity Status

	Primiparous		**Multiparous**	
	Number (n)	**Percentage (%)**	**Number (n)**	**Percentage (%)**
Knowledge Scores on the Prevention of Early Childhood Caries (ECC)				
0-3	14	29.8%	13	24.5%
4-6	31	66.0%	32	60.4%

7-8	2	4.3%	8	15.1%
Total (N)	47	100.0%	53	100.0%

The majority of primiparous (66.0%) and multiparous (60.4%) breastfeeding mothers have a moderate level of knowledge about preventing Early Childhood Caries (ECC), with scores ranging from 4 to 6. A total of 29.8% of primiparous mothers and 24.5% of multiparous mothers have low knowledge, scoring between 0 and 3. However, a higher proportion of multiparous mothers (15.1%) have high knowledge scores (7-8) compared to primiparous mothers, who only account for 4.3%. This indicates that while most mothers have a moderate level of knowledge, multiparous mothers tend to have better knowledge about ECC prevention compared to primiparous mothers.

Table 5. Mean and Standard Deviation of Knowledge Scores on Early Childhood Caries (ECC) Prevention Among Primiparous and Multiparous Breastfeeding Mothers

	Primiparous		**Multiparous**	
	Mean	**Std. Deviasi**	**Mean**	**Std. Deviasi**
Knowledge Scores on the Prevention of Early Childhood Caries (ECC)	4.09	1.176	4.79	1.160

The average knowledge score for preventing Early Childhood Caries (ECC) is 4.09 with a standard deviation of 1.176 for primiparous breastfeeding mothers, while for multiparous breastfeeding mothers, the average score is higher at 4.79 with a standard deviation of 1.160. However, the average results of knowledge scores regarding ECC prevention between breastfeeding mothers primipara and multipara were not much different.

Table 6. Comparison of Knowledge Scores on Early Childhood Caries (ECC) Prevention Between Primiparous and Multiparous Breastfeeding Mothers

	Median (min-max)		***p-value***
	Primiparous	**Multiparous**	
Knowledge Scores on the Prevention of Early Childhood Caries (ECC)	4.00 (2-8)	5.00 (1-8)	0.019*

*Sig, *p-value* ≤ 0.05, *Mann Whitney test*.

The Mann-Whitney U test showed that the median knowledge score for preventing Early Childhood Caries (ECC) was 4.00 for primiparous breastfeeding mothers, with a range from 2 to 8. In contrast, multiparous breastfeeding mothers had a higher average knowledge score of 5.00, with a range from 1 to 8. The statistical analysis yielded a p-value of 0.019, indicating that this difference is statistically significant ($p \leq 0.05$). Therefore, it can be concluded that multiparous breastfeeding mothers have significantly better knowledge about ECC prevention compared to primiparous breastfeeding mothers.

Discussion

The study's findings reveal that 53 respondents are multiparous breastfeeding mothers, while 47 respondents are primiparous breastfeeding mothers. This suggests a higher prevalence of multiparous breastfeeding mothers as opposed to primiparous breastfeeding mothers. These results are consistent with a study conducted by Kharouba J et al. in 2023, which also reported a higher proportion of multiparous breastfeeding mothers compared to primiparous breastfeeding mothers (Kristiani et al., 2023).

Based on the frequency distribution of respondents' ages, segmented into two groups, namely primiparous and multiparous, within the age bracket of 17 to 46 years, it is evident that the predominant age range for respondents in both groups lies between 17 and 35 years. This observation aligns with the findings of an empirical study conducted by Kristiani A, Dewi TK, and Sugesti H in 2023, which also indicated that the majority of respondents fell within the 26-35 age category.[18] Moreover, research authored by Hajifah T, Kesumadewi T, and Immawati in 2022 underscores the notion that the age range of 20-35 years signifies a healthy and mature reproductive phase, which supports the practice of exclusive breastfeeding (Hajifah et al., 2022).

The results of the questionnaire on knowledge scores of primiparous and multiparous breastfeeding mothers showed that a majority of respondents, both primiparous and multiparous, answered incorrectly about the timing of the first

dental visit. This aligns with a study by Bani Hani et al. (2021), which also found a high rate of incorrect responses about the timing of the first dental visit (BaniHani et al., 2021). According to the American Academy of Pediatric Dentistry (AAPD), children should visit a dentist within 6 months of the eruption of their first tooth and before the age of 12 months to receive education and preventive guidance for parents (Dwimega, 2021). In terms of statements about children's oral hygiene, multiparous breastfeeding mothers demonstrated better knowledge compared to primiparous breastfeeding mothers. This corresponds with the findings of Kharouba J et al. (2023), which revealed that 72% of multiparous breastfeeding mothers had a better understanding of the importance of maintaining their baby's oral hygiene even before the eruption of teeth, as well as the need to clean the mouth twice daily (morning and evening) once the first tooth erupts (Segù et al., 2023). Additionally, the research by Dwimega A. (2022) supports this, stating that oral hygiene should be maintained before the eruption of the first tooth, and tooth brushing should begin when the first tooth erupts (Dwimega, 2021).

The research by Kharouba et al. (2023) found that multiparous mothers showed better knowledge about the development of dental caries in children under the age of 3 compared to primiparous mothers. The study also revealed that 80.4% of mothers, whether primiparous or multiparous, were aware that dental caries could develop if not addressed promptly. This awareness is attributed to the fact that children under 3 years old lack the ability to maintain effective oral hygiene independently and require parental assistance, particularly from mothers (Shrestha et al., 2024). Additionally, the research highlighted that multiparous mother had a better understanding of the sugar content in infant formula compared to primiparous mothers (Malagi et al., 2021). The study indicated that infant formula contains various nutrients, but it also includes glucose, which can adhere to teeth (El Fithriyah & Herryawan, 2018).

In discussions about the link between breastfeeding at night and the development of dental cavities, it was found that multiparous mothers seem to have better knowledge compared to primiparous mothers. Breastfeeding at night exposes the teeth, especially the cervical areas of the teeth, to cavity-causing bacteria (Putri et al., 2023). This supports the findings of a study by Shrestha et al. (2024) which suggests that breastfeeding at night, especially if the baby falls asleep while breastfeeding, can increase the risk of Early Childhood Caries (ECC).

The analysis of knowledge scores on the prevention of Early Childhood Caries (ECC) among primiparous and multiparous breastfeeding mothers shows that most respondents in both groups scored between 4 and 6. This suggests that both types of breastfeeding mothers have a good level of knowledge about preventing ECC. These findings are consistent with a study by El Fithriyah & Herryawan (2018) which also found that the majority of mothers had sufficient knowledge about preventing ECC.

This study found that multiparous breastfeeding mothers tend to have a higher average knowledge score regarding the prevention of Early Childhood Caries (ECC) compared to primiparous breastfeeding mothers. This finding is consistent with research conducted by Baker SD et al. (2016), which indicated that multiparous women tend to have better knowledge about infant oral health compared to nulliparous or primiparous women.

The knowledge of multiparous breastfeeding mothers about preventing Early Childhood Caries (ECC) is significantly better than primiparous breastfeeding mothers. This finding is supported by studies conducted by Hajifah et al. (2022), as well as by Kharouba et al. (2023). These studies indicate that mothers with more children have better knowledge regarding ECC prevention, and this difference may be influenced by their experience.

CONCLUSION AND SUGGESTION

Based on research findings about the difference in knowledge regarding the prevention of Early Childhood Caries (ECC) between primiparous and multiparous breastfeeding mothers at the Maternal and Child Health (MCH) Clinic of Satelit Public Health Center in Bandar Lampung City, it can be concluded that the number of respondents among primiparous and multiparous breastfeeding mothers is relatively similar. The majority of respondents are in the age range of 26-35 years for both groups. The average age is 26 years for primiparous breastfeeding mothers and 32 years for multiparous breastfeeding mothers. This age range represents a healthy and mature reproductive period, which supports exclusive breastfeeding. In terms of knowledge scores on ECC prevention, both primiparous and multiparous breastfeeding mothers possess adequate knowledge, with scores ranging from 4-6. Multiparous breastfeeding mothers have a higher average knowledge score on ECC prevention compared to primiparous mothers; however, the difference in average scores is not substantial. Data analysis and discussion indicate that there is a notable difference in knowledge between primiparous and multiparous breastfeeding mothers, with multiparous mothers demonstrating better knowledge regarding ECC prevention. Based on these conclusions, it is recommended that education be provided through media such as posters on ECC prevention by health workers at integrated service post for breastfeeding mothers, particularly primiparous ones. Interactive education through question-and-answer sessions

should also be implemented. The public health center could distribute flyers to new mothers or those still breastfeeding regarding ECC prevention. Additionally, the public health center could establish a bi-weekly counselling program or small classes during pregnancy with obstetricians focusing on ECC prevention. Future research should consider exploring the relationship between the knowledge of primiparous and multiparous breastfeeding mothers and sociodemographic factors such as education, occupation, and income. Including assessments of children's def-t index from these mothers could also provide a more comprehensive understanding of maternal knowledge regarding ECC prevention.

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